LABOR AND POWER

Used for Farm Enterprises

IDAHO

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PREFACE

The Bureau of Agricultural Economics makes annual estimates of the total man-hours of labor used in farming in the nine geographic divisions and in the United States. 1/ Comparable data have also been developed for each State for 2 years. 2/ These estimates were made by applying average man-hours per acre or per head to the official estimates of acres of crops and numbers of livestock. Man-hours per acre or per head vary from year to year depending on yields, degree of mechanization, and other factors.

Labor rates per acre and per head are not the result of special surveys, but are estimates based on secondary sources such as farm-management reports, studies of costs of production, and analyses of changes in farm practices and mechanization. These sources have provided considerable data for some enterprises and areas but much less for others.

This survey was undertaken to provide current data as an aid in keeping these series up-to-date. It was conducted in four States: Idaho, Indiana, Mississippi, and Pennsylvania. Reports presenting the results of the survey in the other three States are being prepared.

1/ See "Gains in Productivity of Farm Labor" by Reuben W. Hecht and Glen T. Barton, U. S. Dept. of Agr., Tech. Bul. 1020, 1950.

2/ See "Labor Requirements for Crops and Livestock", by M. R. Cooper, and others, U. S. Bur. of Agr. Econ. F.M. 40, 1943 (Processed) and "Farm Labor Requirements in the United States, 1939 and 1944", by Reuben W. Hecht, U. S. Bur. of Agr. Econ., F.M. 59, 1947 (Processed).

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LABOR AND POWER USED FOR FARM ENTERPRISES, IDAHO, 1950

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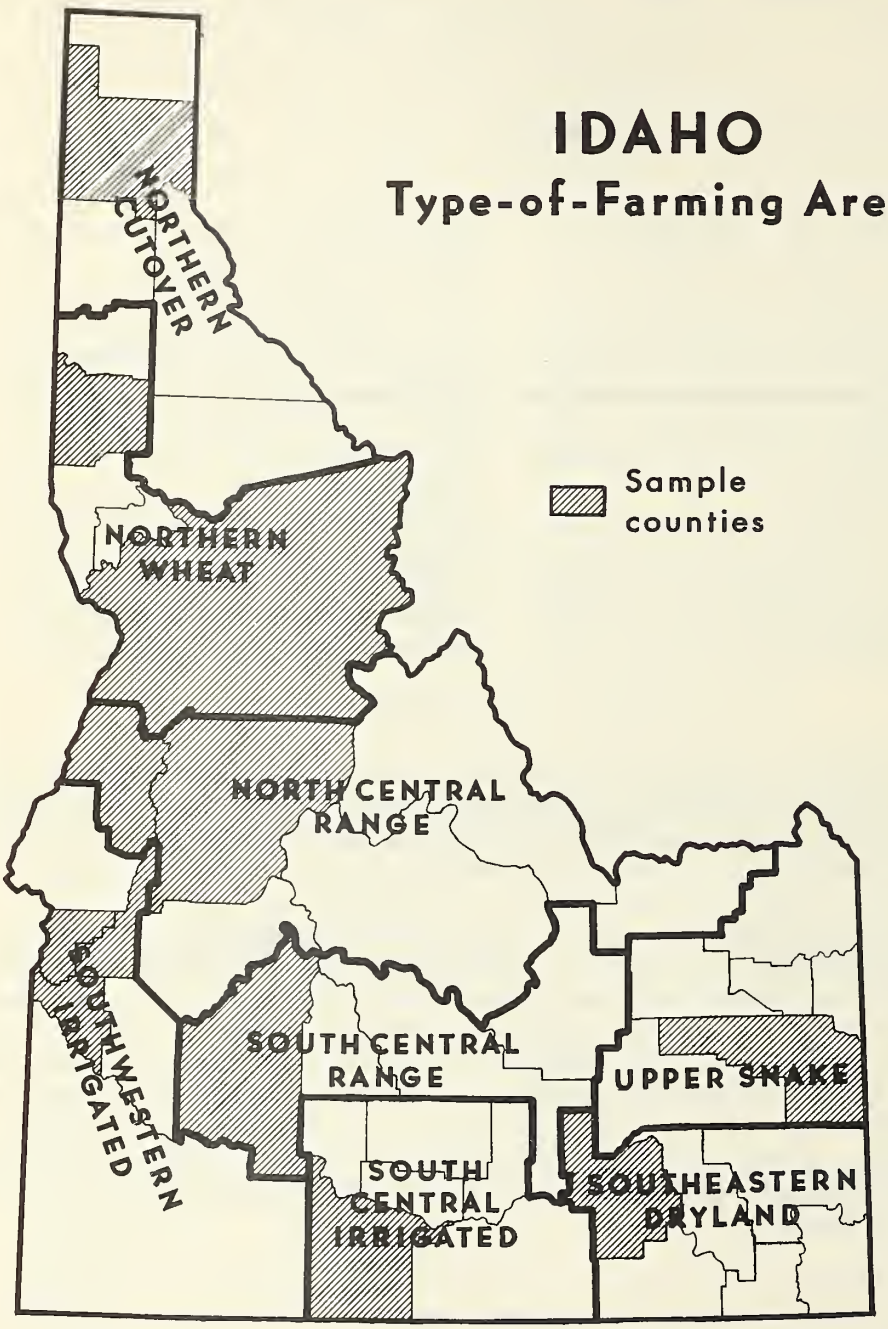
HOW THE SURVEY WAS CONDUCTED

A "locality" type of questionnaire, in which each farmer answered for his locality rather than for his particular farm, was used in this survey. This approach was used to obtain a wider coverage of areas and enterprises with a given amount of resources.

As indicated on the map on the following page, sampling was done by type-of-farming areas. A representative county was selected within each area. More than one were selected in some areas, primarily because some crops are grown extensively in only part of an area. In the Northern Wheat Area, for example, production of dry field peas occurs principally in the Northwestern part of the area while the production of Austrian winter pea seed is in Lewis and Idaho Counties. Obtaining records in more than one county per area has an additional advantage of more widely distributing the records for enterprises important in all parts of an area.

In selecting farmers to interview, people within each sample county who were in a position to know farmers were asked to prepare, independently, lists of "well-informed farmers" representing the entire range in size of crop and livestock enterprises and location within the county. Those who prepared lists in the various counties included county extension agents, Production and Marketing Adminis-



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tration committeemen, other representatives of the United States Department of Agriculture, dealers in farm supplies, and field men for companies that process farm products such as sugar beets, milk, fruits, and vegetables. So far as possible, farmers living in each part of the county whose names appeared on these lists the greater number of times were selected for interview.

It was originally planned that only summary figures from this survey would be published. The published data for crops, for example, would be limited to totals, with subtotals for the work before harvest and for harvest. As summarization progressed, however, it was realized that the data merited the release of more detailed figures. This makes the publication more useful to those interested in the subordinate items.

QUESTIONNAIRE USED

The questionnaire was composed of three records: labor requirements for crops, for livestock, and for farm maintenance. Completed records were obtained from farmers in a number of combinations and not necessarily one of each from every farmer interviewed.

Each farmer was asked to indicate the operations performed in growing, harvesting, and marketing one or more of the crops he had grown for several years; and for each operation, the proportion of the acreage done with each kind and size of power unit and machine and the hours used per acre. He was asked to supply the average yield in his locality during the last few years, and for certain crops other pertinent information, such as the length of stand for perennial hays and the average number of fruit trees per acre. Bearing fruits only were included.

From 1946 to 1948 the Idaho Agricultural Experiment Station and the Bureau of Agricultural Economics collected considerable data on labor requirements for crops with an individual farm questionnaire in the irrigated sections of the State, particularly the Southwestern Irrigated Area. The existence of these data with which to compare information collected in this survey was one reason Idaho was selected as one of the States in which to conduct this survey. As it has developed, total hours per acre for the different crops are only partially comparable because of different methods of summarization. Data for individual farms were summarized in terms of the usual operations and the most common size of implement, whereas all operations and sizes of machines reported in this survey were included in the summary. Despite this variation in method of summary, hours per acre for most crops do not differ greatly. For some crops, the fact that the surveys were conducted in different years explains the difference in results. In 1946 and 1947, for example, the sugar beet harvest was chiefly by hand, but in 1950, a considerable part of the crop was harvested entirely by machines, requiring considerably less labor.

Differences between comparable basic figures collected by the two methods are small. Among such comparable figures, for example, are the rates of performance for specified sizes of machines. These data for a common size of three tractor-drawn machines in the Southwestern Irrigated Area are as follows:

Operation	Size of machine	Individual farm records for 1947 1/		Locality records for 1950	
		Number of cases	Hours per acre	Number of cases	Hours per acre
Plowing	1-bottom 16 inch	54	2.1	58	2.0
Tandem disking	6-foot	54	.7	23	.6
Harrowing, spike-tooth	3-section	46	.3	57	.3

1/ From table 15 of "How Selected Specialty Crops Were Produced in the Boise and Payette Valleys of Idaho, 1947", by Christian A. Stokstad, U. S. Department of Agriculture, Bureau of Agricultural Economics, F.M. 89, 1951 (Processed).

For livestock, the farmer was asked to give the number of each kind on his farm, and to estimate for a comparable size of herd or flock in his locality the average time spent during each season in doing daily chores and other jobs. He was asked also to give average production items, such as milk per cow, eggs per hen, and selling weights of meat animals.

Many farmers find it difficult to report accurately the amount of time spent on different livestock enterprises. Frequently, parts of the chore work for a certain kind of livestock are done by different persons, often children do part of them. The division of work may be on the basis of the amount of physical strength or skill demanded by different jobs. Even with only one person concerned, the flow of chore work on many farms is by kind of job rather than by type of livestock. For example, the feeding of several types of livestock may be done as an uninterrupted task rather than as all the chore work on one type of livestock done continuously. These factors, however, have similar effects on data given by farmers whether reporting for their farm or for their locality.

Average labor requirements for livestock collected in this survey are well in line with those summarized from records for individual farms. A survey conducted on the basis of individual farm records 3/ found that

3/ "Production Requirements for Major Enterprises on Southern Idaho Irrigated Farms", by Roland C. Bevan, University of Idaho, Agricultural Experiment Station, 1951 (Mimeo.Leaflet No. 116, Processed).

average man-hours per milk cow in 1948 in the Southwestern Irrigated Area were 124.4 hours, compared with 129 hours per cow found in this study. In this Experiment Station survey, the requirement for young dairy stock was found to be 17.6 man-hours per head per year, compared with 18 hours per head for all young cattle in this study.

For farm maintenance work, the farmer was asked to estimate the average time spent per year on each of several farm maintenance jobs on farms in his locality that were similar to his in size and in other respects. He was asked also to indicate the total number of hours spent at farm work per year on the average farm by kind of worker.

Farm maintenance work includes such jobs as machinery repair; construction and maintenance of buildings, fences, irrigation, and drainage structures; soil conservation work that is not a part of a regular crop operation; work on farm forests and permanent pastures; and time for business trips and other farm business and miscellaneous jobs. The same problems are encountered in the collection of data regarding time for these jobs as in the collection of data on labor requirements for livestock. Farm maintenance work is done intermittently and it is difficult for the farmer to think in terms of total time spent on it.

Every survey calls forth a range of responses to any question that requires a numerical answer. This survey had more than the usual proportion of high answers to questions on yields of some crops, of some livestock production items, and of total hours spent at farm work, particularly by the farm operator. These high responses may have resulted from any number of causes, but an important one may have been that figures were requested which represented an "average" for more than one year. Farmers probably tend to think of yields received in the more favorable years as being close to rather than above average. Data from the census, the Crop Reporting Board and other sources facilitated thorough checking and editing of the records received in this survey. In future work, the possibility of overestimating probably can be prevented by the addition of a few safeguarding questions properly worded so as not to influence the answers of farmers.

After the summarization of the data was completed they were returned to the State and sample counties for review as an additional check for accuracy and reliability. Many improvements were made as a result of this review but no significant adjustments in the data were suggested.

LABOR REQUIREMENTS FOR CROPS

In this survey requirements were obtained for more than 20 crops. These data are presented in tables 1 to 18. The number of type-of-farming areas in which the data for each crop were obtained, varies from 7 for alfalfa hay to only one for several crops.

Alfalfa Hay

More labor is required for the production of alfalfa hay than for any other crop in Idaho. It is exceeded in acreage only by wheat. While considerable acreage of pure stands of alfalfa are grown in the State, it is often mixed with other legumes and grasses when a seed crop is not wanted. The information reported in table 1 applies to both the pure stands and to those mixtures that contain a predominance of alfalfa. In summarizing the requirements for harvest, all variations in harvesting methods were combined into four main methods - putting up loose, pick-up baling, pick-up chopping, and stationary chopping. Many different combinations of size of crews, place of storage, kind and size of machines, conveyances, and power units are used within each of these four methods, particularly in putting up long loose hay.

Stands of alfalfa are established in a variety of ways in different parts of the State, but on irrigated land most of the alfalfa is established with a small-grain companion crop. Some is seeded after the companion crop has been drilled, but more frequently a grass-seeder attachment is put on the drill and both small grain and alfalfa are seeded in one operation. For the sake of simplicity, when this combined seeding is done, the labor and power involved in land preparation, seeding, and irrigating are charged entirely to the small grain. When alfalfa is seeded on an established small-grain crop, only the seeding and the extra operations performed because of the alfalfa are charged to it. Most of the alfalfa established on dry land is seeded alone or without a companion crop.

Alfalfa is cut for hay from one to three times in the different parts of the State, depending chiefly on the length of growing season and supply of moisture.

The following data summarize the information presented in table 1:

	Northern Cutover	Northern Wheat	North Central Range	South Central Range	Southwestern Irrigated	South Central Irrigated	Upper Snake
Yield per acre (tons)	1.7	1.3	1.6	2.5	3.6	3.9	2.7
Tons handled per acre by each method:							
Store loose hay	1.19	.32	.56	1.02	1.76	1.01	1.81
Pick-up bale and store	.51	.85	.91	1.23	.94	2.46	.89
Pick-up chop and store	---	.04	---	---	.90	.43	---
Stationary chop and store	---	.09	.13	.25	---	---	---
Man-hours per ton for harvest: 1/							
Store loose hay	3.55	2.45	2.20	2.12	2.25	2.13	2.30
Pick-up bale and store	3.52	2.63	2.48	2.46	2.25	2.40	2.38
Pick-up chop and store	---	2.09	---	---	1.96	1.98	---
Stationary chop and store	---	2.68	2.77	2.83	---	---	---
Total hours per ton:							
Man	5.31	3.75	4.01	4.93	5.49	5.67	7.56
Tractor	2.08	1.83	1.93	2.24	1.78	1.87	1.66
Truck	.55	.45	.26	.10	.13	.29	.23
Horse	1.72	.08	.59	.20	.41	---	.73

1/ From windrow or shock to storage.

In the first section, the yield per acre is broken down into the tons of hay that are put up by each method. These data indicate that in three areas more alfalfa is put up loose than by any other one method. The method most used in the other four areas is baling with pick-up balers.

In the southern areas of the State, the long, loose hay is chiefly stored in stacks. Around a fourth of it is hauled to the stack on slips, another fourth on racks, wagons or trucks, and the other half is hauled with buckrakes. All of it is stacked with slings or stackers of various sorts. One of the machines is the tractor-attached hydraulic power lift. When this machine is used to put up long loose hay, it performs one or a combination of two or more jobs. It may function as a stacker or to load hay on racks or trucks for transporting to storage. Sometimes it is used to gather, transport, and stack hay. It then serves as a buckstacker. As such it is the most labor-efficient machine for stacking long loose hay when the hauling distance is not great. The slips and some of the wheeled conveyances are loaded by hand. Otherwise, little of the hay is handled by hand; labor requirements are not high, averaging a little more than 2 hours per ton. Labor requirements for storing loose hay are highest in the Northern Cutover Area (3.55 man-hours per ton) because about three-fourths of it is hauled by wagon and put into barns or sheds.

In three areas, baling with a pick-up baler and storing the bales took around the same number of man-hours per ton as storing loose hay. These are the areas in which the less labor-efficient methods of putting up loose hay were used. In areas where the more labor-efficient methods of putting up loose hay were used, the pick-up baler method took up to 16 percent more man-hours per ton. In this area, the South Central Range, it took 2.46 man-hours per ton with the pick-up baler method and 2.12 man-hours to put up a ton of loose hay. For all areas, the range was from 2.25 to 3.52 man-hours per ton for baling with pick-up balers and storing the hay.

The method that takes the least labor, chopping with a pick-up chopper, was used the most in the Southwestern Irrigated and South Central Irrigated Areas, where it was used in putting up 25 and 11 percent of the alfalfa hay, and required 1.96 and 1.98 man-hours per ton, respectively. When this method is used a considerable investment in machinery is required, but it is a labor-efficient method of harvesting hay.

Man-hours per ton for harvest varied much less than did total hours per ton because of the big differences in the time required for establishing the stand and for the operations involved in annual care, such as irrigating. In all areas covered by the survey, total man-hours per ton varied from 7.56 to 3.75, tractor-hours per ton from 2.24 to 1.66,and truck-hours per ton from 0.55 to 0.10. Horses were used more for mowing, raking, and hauling loose hay than for any other operation. Horse-hours totaled 1.72 per ton in the Northern Cutover Area, and fewer than one horse-hour per ton in all other areas.

Clover and Timothy Hay

In recent years in Idaho clover and timothy hay have been harvested on approximately a fifth as many acres as alfalfa. However, it exceeds the acreage of alfalfa in the Northern Cutover Area and is almost as important in the Northern Range Area. Clover and timothy include pure stands and mixtures that contain a prevalence of timothy or one or more of the clovers.

Stands of clover and timothy hay were established much the same as alfalfa, except that less was seeded alone and more was seeded with a companion crop (table 2). But this was a minor difference, and total preharvest hours per acre for clover and timothy hay and for alfalfa did not differ much.

The following data give the highlights of the information presented in table 2:

	Northern Cutover	North Central Range
Yield per acre (tons)	1.4	1.3
Tons handled per acre by each method:		
Store loose hay	.78	.49
Pick-up bale and store	.62	.81
Man-hours per ton for harvest: 1/		
Store loose hay	3.50	1.80
Pick-up bale and store	3.48	3.29
Total hours per ton:		
Man	5.46	4.42
Tractor	2.59	2.51
Truck	.28	.13
Horse	1.91	.07

1/ From windrow or shock to storage.

A little more than half of the clover and timothy hay in the Northern Cutover Area was put up loose, but the opposite was true in the North Central Range Area. Little difference was noted in the labor requirements per ton for putting up loose hay and baling and storing the bales in the Cutover Area, but the man-hours for putting up loose hay were much less than for the pick-up baler method in the North Central Range. In this area, most of the loose hay was stacked with stackers, which is a labor-efficient method of handling hay.

Clover and timothy hay required 4.42 total man-hours per ton in the North Central Range and 5.46 hours per ton in the Northern Cutover Area. Tractor-hours and truck-hours per ton were also higher in the Northern Cutover Area, and horse-hours were a great deal higher. In this area, horses are used more extensively for putting up hay than they are in the North Central Range Area.

Summer Fallow

Practically all the winter wheat and a considerable quantity of other small grains grown on dry-land and in the Southeastern Dry-land and Upper Snake Areas are seeded on summer fallow. In these areas, summer fallowing is done primarily to conserve moisture, whereas in the Northern Wheat Area, where summer fallowing is practiced to a considerable extent, the supply of moisture is a problem of less magnitude. Here fallowing is done also for weed control.

In the Northern Wheat Area, the initial operation on practically all of the summer fallow is plowing with a moldboard plow (table 3). In the two other areas, only a part is plowed and on the rest one-way disk tillers and duckfoot-type cultivators are chiefly used. In all three areas the land is disked, harrowed, or rod-weeded periodically during the summer. In the Northern Wheat Area, a total of 1 3/4 hours per acre were spent on summer fallow. A total of less than an hour an acre was spent on summer fallow in the other two areas. Here the land was gone over fewer times, and larger machines were used, than in the Northern Wheat Area.

Winter Wheat

During recent years, the acreage of winter wheat has been greater than that of any other crop in the State. It is produced under widely varying conditions, but little is grown on irrigated land. In the dry-land farming sections of the Upper Snake and Southeastern Dry-land Areas, it is grown chiefly on summer fallow (table 4). In the Northern Cutover Area, it is produced on land continuously cropped; and in the Northern Wheat Area it is grown on both continuously cropped and summer fallowed land. In preparing land for winter wheat in the Northern Wheat Area, more time is spent on an acre of summer fallow than on an acre of nonfallowed land. About a third of the time for land preparation is spent on the 26 percent that is summer fallowed.

Wheat is seeded with a drill in all areas, sometimes in combination with other operations such as rod-weeding, harrowing, and cultipacking. When drilling is done alone the land is often harrowed or cultipacked following seeding. In the Southeastern Dry-land Area, two methods are used to reduce the infestation of winter rye in the wheat. One is to use a special machine called a "rye clipper" which cuts the rye that stands above the wheat; the other is to pull-by-hand or "rogue" the rye.

In Idaho winter wheat is harvested with combines. The width of cut of the machines used varies all the way from 5 to 20 feet. Combining and hauling grain took about an hour and a half of labor an acre in the Northern Cutover Area. Although small combines - 5 and 6 foot machines - were chiefly used in this area, because of differences in size of crew, the labor requirements were only a little more than in the Northern Wheat area where larger machines were used. Except for the self-propelled outfits, the larger combines take a 2-man crew whereas one man operates the smaller machines. In these areas more than two-thirds of the wheat was harvested with 16-foot and larger machines and much of the rest with 12-and 14-foot self-propelled combines. All the wheat was hauled by truck, some directly from the combine to market and the rest to farm storage, and later to market. With these machines, it took only about 1 hour of man labor to combine and market an acre of wheat.

Spring Wheat

In contrast to winter wheat, almost half of the spring wheat harvested in the State in 1950 was grown under irrigation. Records for spring wheat were obtained in three areas, irrigated spring wheat in two, and dry-land in the other (table 5). No records were obtained in another important irrigated spring wheat producing area, the South Central Irrigated Area.

In the Northern Wheat Area, in which the records for dry-land spring wheat were obtained, the operations and practices in producing the grain are similar to those of winter wheat production. Total labor requirements were 2.77 hours per acre, or slightly less than those for winter wheat. Sometimes spring wheat is seeded on winter wheat that has failed, usually the result of winterkilling. Little additional land-preparation work is required and the hours for preharvest are lower than is shown in table 5.

Labor requirements for irrigated spring wheat were more than 11 and 14 hours in the Southwestern Irrigated and the Upper Snake Areas, respectively. These requirements are greater than those for dryland wheat. Additional work is involved in leveling, diking or corrugating, and irrigating the crop. A considerable quantity of irrigated spring wheat is harvested by the more time-consuming binder-thresher method. Farmers on irrigated land usually have smaller machines that can be used for the operations common to both irrigated and dry-land wheat.

Oats and Barley

Oats and barley are widely grown by farmers in both irrigated and dry-land areas in the State. While the data for these two crops were obtained separately, the production methods and requirements were similar and the records were combined for summarization. Yields of barley (in pounds) are greater than those of oats, hence more man-hours are required to harvest barley. However, the differences in yields are not large and it takes a considerable difference in yield to affect the labor requirements significantly, particularly if combining is the method of harvest. Also, in areas where barley and oats are harvested by both the combine and binder-thresher methods, a little more of barley than of oats is combined. This tends to reduce the average requirements for barley.

Operations performed in raising oats or barley are similar to those for wheat (table 6). The land is plowed, worked down with disks and harrows, and seeded with grain drills. In most areas, from a fourth to more than half of the acreage is harrowed or cultipacked after seeding; irrigated land is also corrugated and water is applied. In the Northern Wheat and North Central Range Areas in 1950, oats and barley were harvested with combines, requiring 1.38 and 1.93 man-hours, respectively. Both the combines and the bind-shock-thresh methods were used in the other three areas. An average of about a tenth of these crops was threshed in the Northern Cutover and Southwestern Irrigated Areas, and, as in the case of spring wheat, a larger proportion of it was threshed - 63 percent in the Upper Snake Area.

Sugar Beets

Sugar beets are an important source of cash income on many farms in the irrigated sections of Idaho. According to the U. S. Census, farmers who raised sugar beets in the Southwestern Irrigated Area harvested an average of 18.1 acres of beets in 1949. About 13 acres of beets per farm were grown in the South Central Irrigated and Upper Snake Areas.

Plowing was usually the first operation in preparing land for sugar beets, but sometimes plowing was preceded by disking (table 7). After plowing, the land was worked down with disks and harrows and most of it was floated or leveled. After planting, 35 percent in the Southwestern Irrigated Area, and 16 percent in the South Central Irrigated Area was finger-weeded, harrowed, or cultipacked.

Fertilizer was applied on about two-thirds of the sugar beets in the Southwestern Irrigated Area, on slightly more than three-fifths in the South Central Irrigated Area, and on a little less than a fifth in the Upper Snake. It was applied at various times and in various ways - in a separate operation before planting, with a spreader attached to the planter, as a separate side-dressing operation after planting, and as a side-dressing combined with a cultivation.

Beets were blocked and thinned, cultivated an average of six to seven times, and got about two hand-hoeings. From seven to nine irrigations were interspersed with the cultivations, which took from 9 to 15 hours in the three areas. Man-hours per acre of sugar beets up to the time of harvest totaled around 58 hours in the Southwestern Irrigated Area and approximately 53 hours in the South Central Irrigated and Upper Snake Areas.

Machines for harvesting sugar beets have been used experimentally for several years, but they have been used commercially only during the last decade. In 1950 only 8 percent of the beets harvested in the Southwestern Irrigated Area were both topped and loaded by hand. An additional 31 percent were topped by hand but loaded mechanically. In the South Central Irrigated and Upper Snake Areas, 27 and 33 percent, respectively, were topped and loaded by hand. Beet harvesters that do the complete job --lift, top, and load the beets into trucks ready for hauling--were used to harvest from 55 to 64 percent of the acreage in the three areas. Another method of mechanized harvest in which one machine lifts, tops, and windrows beets, and another elevates them into trucks, was used on from 6 to 10 percent of the acreage. The main advantages to be derived from the use of beet harvesters are in saving labor and in shortening the harvest period, without the use of large crews. The potential saving in labor resulting from a complete shift from hand to the mechanical method that uses the least labor, ranges from around 30 to 16 man-hours in the three areas, the difference depending

chiefly on the size of yield. A harvester can travel almost as fast in high-yielding as in low-yielding beets, whereas the rate of hand-work is closely related to yield. Actually, an average of from 17.9 to 9.4 man-hours per acre was saved by mechanization in 1950, as compared with man-hours per acre with complete hand-topping and loading. The savings in labor as reflected in costs were not net, as some of them, at least, were balanced by the initial and operating costs of the harvesters and the power required for operating the machines.

Total labor requirements per acre for beets in 1950 amounted to 83, 74, and 69 man-hours in the Southwestern Irrigated, South Central Irrigated, and Upper Snake Areas, respectively. Comparable labor requirements per ton were 3.8, 4.2, and 5.7 man-hours.

Potatoes

Although production of potatoes for home use is widely distributed over the State, commercial production is concentrated in the same three areas as sugar beets. The requirements presented in table 8 are for commercial production in these areas. In these three areas, farmers who raised potatoes numbered around 2 1/2 times those who raised sugar beets, according to the 1950 Census, but an average of about 15 acres of each of these two crops was harvested per farm that reported them.

Preparation of the land for potatoes does not differ greatly from that for sugar beets. It is plowed with moldboard plows and worked down with disks and harrows; and from a fourth to almost all of the land in the different areas is worked over once or twice with a leveler or a float. Frequently, one irrigation is made before planting. The time required for this job is included in the data recording time used in irrigation after planting. It takes from 6 to 7 hours to cut enough potatoes into seed pieces to plant an acre. Planting is done with potato planters rather than by dropping the seed by hand in furrows. Cultivation may start before the potatoes are up. The number of cultivations ranges from an average of from 3.7 to 5.5, each of which is alternated with one or more irrigations. Average man-hours per acre up to harvest varies from 26.8 to 28.5 hours, or by about 6 percent in the three areas.

In harvesting, roto-beaters were used to dispose of the vines on some 25 percent of the acreage. Potato diggers were used to remove the tubers from the ground. They were then picked up by hand, put into sacks, and hauled to storage. In the Southwestern Irrigated Area, workers picked up an average of 163 bushels per 10-hour day. Workers in the other two areas accomplished slightly less than this.

Potato combines were used to harvest 52 percent of the acreage in the Upper Snake Area. With these machines, the usual crew of five men dug and sacked an acre of potatoes in from 2 to 3 hours. It required a little more than 18 man-hours to harvest and store an acre of potatoes when the combine was used, compared with 22.7 man-hours with the conventional hand-picking method.

Total man-hours per acre ranged from 48 in the Upper Snake Area to more than 57 in the Southwestern Irrigated and the South Central Irrigated areas. The yield was also higher in the latter two areas.

Dry Beans

The South Central Irrigated Area is the chief dry bean producing section in the State. In 1949, according to the U. S. Census, there were more than 62,000 acres in beans in Twin Falls County alone. Information on requirements for dry beans was obtained also from the Southwestern Irrigated and Northern Wheat areas.

A total of 31.6 man-hours were required per acre of beans in the Southwestern Irrigated Area as compared with 24.6 man-hours in the South Central Irrigated Area (table 9). There was more preharvest work in the Southwestern Irrigated Area, chiefly because of the large amount of time spent in hoeing. Total requirements per acre were 7.12 hours in the Northern Wheat Area, or less than a third of the time required in the irrigated areas. The yield was also comparatively low, as it is a dry-land area; 55 pounds of beans were produced per man-hour, compared with 56 and 76 pounds per hour each in the two irrigated areas.

Beans were harvested by cutting with bean cutters, raking into windrows, and combining from the windrow. Harvesting was done with fewer than 5 man-hours per acre in all areas.

Dry Peas

Production of dry peas in Idaho is essentially limited to the Northern Wheat Area. The acreage reached almost 250,000 during World War II, but in 1950, it was 63,000 or about the same as before the war.

Operations, practices, and requirements for dry peas are similar to those for small grains (table 10). Peas are not, however, grown after summer fallow, although they often replace summer fallow in the rotation. Peas are drilled with grain drills after the land has been plowed and worked down with disks and harrows. About half of the acreage is harrowed or cultipacked after seeding. Most of the peas were harvested by combining the standing crop, but on 7 percent of the acreage the peas were mowed and later picked up with combines. An average of only 3.3 total man-hours was required per acre of peas.

Austrian Winter Pea Seed.

Production of Austrian winter pea seed is fairly well localized on the Camas prairie section of Idaho and Lewis Counties in the Northern Wheat Area. A variety of machines are used in seedbed preparation, including plows, disks, weeders, and harrows (table 11). The peas are drilled and about a third of the acreage is harrowed after seeding. Man-hour requirements before harvest were only 1.3 hours per acre. A little less than 2 man-hours was required for the harvest, which was done with combines. Seventeen percent of the acreage was mowed before combining.

Seed Peas

About 14 man-hours were required for preharvest work on an acre of seed peas in the South Central Irrigated Area (table 12). This was almost 60 percent more time per acre than was required in the Upper Snake Area. The difference may be accounted for largely by the fact that half of the peas in the South Central Irrigated Area was planted in rows and cultivated, more of the land was plowed rather than disked without plowing, and more was treated with fertilizer and manure. All the peas in the Upper Snake Area were seeded with drills. Nothing else, except irrigating and roguing, was done to them until harvest. Roguing consists of walking through the field and pulling the diseased and undesirable plants and carrying them out of the field.

In harvesting, all the peas were cut or mowed and windrowed, and those that were to be threshed later were shocked or piled. A fourth of the peas in the South Central Irrigated Area, and 40 percent in the Upper Snake, were threshed, and the rest were combined from the windrow. Total man-hours per acre averaged more than 19 in the South Central Irrigated Area and more than 14 in the Upper Snake Area.

Fall Lettuce

Fall lettuce is grown on land that had produced a previous crop the same year, usually a spring truck crop. Half of the land was plowed in preparing for fall lettuce, and the rest disked (table 13). After this, 62 percent of the land was gone over with both harrows and floats and the rest with one implement or the other. Half of the lettuce was planted on beds, the rest flat. Almost 36 of the 45 man-hours used for preharvest work were required for the three hand operations of blocking and thinning, irrigating, and hoeing. Cutting, loading, and hauling the lettuce required almost 48 hours per acre, with an average yield of 125 crates.

Peas for Fresh Market

Preparation of land for peas in the Southwestern Irrigated Area included an average of five operations, consisting of one plowing, two spike-tooth harrowings and two other operations of various combinations of disking, spring-tooth harrowing, and floating (table 14). In contrast to the method of seeding peas that were grown for seed, all the peas grown for fresh market were planted in rows. An eighth of the peas were

cultivated exclusively with rotary hoes but the rest were gone over with row-crop cultivators, sometimes in combination with finger weeders and rotary hoes. Irrigating was the most time-consuming of the preharvest jobs, taking 6.84 hours, or almost half of the 14 hours for all work up to harvest time.

Large crews were usually employed to pick the peas; the total harvest job took 218 hours per acre. Most of the fields were harvested in one picking, but enough others were picked more than once to bring the average up to 1.1 times over.

Dry Onions

Man-hours for preharvest work on onions are dominated by the large amount of hand work for hoeing and irrigating. The time for these two operations constituted almost 90 percent of all preharvest work in both the Southwestern Irrigated and South Central Irrigated areas (table 15). Practically all the land for onions in both areas was plowed and worked down with disks and harrows. The onions were cultivated from 6 to 7 times, in addition to the considerable time spent in hoeing them.

In harvesting, the onions were either lifted by machine, then topped and sacked by hand, or the entire job was done by hand. It took about 6 fewer man-hours to machine-lift, top, and sack them than to pull, top, and sack them by hand. The lifter was used on 39 percent of the acreage in the Southwestern Irrigated Area and on 64 percent in the South Central Irrigated Area. Total labor requirements per acre averaged 234 and 219 man-hours each in the two areas.

Sweet Corn for Processing

Operations performed in preparing land for sweet corn required 4.5 and 5.5 hours per acre in the two southern irrigated areas in which records were obtained (table 16). A larger proportion of the preharvest work came after planting. Cultivating and irrigating were the most time-consuming preharvest operations, taking more than half of the 15 and 18 hours for preharvest work in each of the two areas.

Some farmers used mechanical pickers, chiefly owned by the processing companies, to harvest the sweet corn, but hand picking was the more common method. It took a little less than 5 man-hours to pick by hand and haul a ton of sweet corn. While this represents average performance, many workers can pick a ton of corn in about 2 hours. A high percentage of the corn was hauled in trucks. Total man-hours per acre averaged 33.7 and 39.6 in the Southwestern Irrigated and South Central Irrigated Areas, respectively.

Fruit

The Southwestern Irrigated area is the main fruit-producing section in the State. According to the 1950 Census, 44 percent of the bearing apple trees, 85 percent of the peach, 93 percent of the plum and prune, 77 percent of the sweet cherry, and 50 percent of the bearing sour cherry trees in the State were in this type-of-farming area. Most of the records of labor requirements for fruits were obtained in this area, although a few were taken in the South Central Irrigated Area. As the production methods were similar in the two areas, all records for each kind of fruit were thrown together for summary.

The operations performed on the various kinds of fruits were somewhat similar, but the labor requirements differed considerably. Preharvest work on apples took 98 man-hours an acre, the highest of any of the five kinds of fruit for which data were obtained (tables 17 and 18). Several operations contributed to the higher requirements for apples. Pruning an acre of apple trees and disposing of the brush took 37 man-hours. A high percentage of the acreage of apples was pruned, whereas only 60 percent of the acreage of sour cherries was pruned, and it took only 22 man-hours to prune an acre.

All the fruits were irrigated an average of six or seven times and took a total of from 12 to 19 man-hours an acre. All the apples were sprayed an average of 3.7 times and 83 percent of the peaches, plums, and prunes were sprayed about twice. Spraying was done on about two-thirds of the sour cherries and on one-third of the sweet cherries. The acreage of sweet cherries was sprayed for an average of 1.2 times, and of sour cherries 1.6 times.

Apples and peaches were the only fruits that were thinned and propped. Thinning was time-consuming, taking 31 and 27 man-hours an acre for apples and peaches, respectively. Propping was done on 29 percent of the apples and 28 percent of the peaches.

Before the trees reach full bearing age, all the orchards are seeded to more or less permanent cover crops. Cover crops are reseeded only to maintain a stand; about 3 percent of the acreage is reseeded each year. Two methods, mowing and cultivating lightly, are used to flatten cover crops, particularly before harvest. The light cultivation is done with a spring-tooth harrow or similar light implement that does not damage the crop unduly.

It took 86 man-hours to pick the 431 bushels of apples produced on an acre and more than 200 hours to pick the much lower yield of sweet cherries. Most varieties of sweet cherries must be handled carefully to prevent damage and picking them is an exacting job. Picking the 172

bushels of peaches on an acre took 41 hours, the 257 bushels of prunes took 104 hours, and the 2,216 pounds of sour cherries 89 hours.

Total number of man-hours used in producing and harvesting an acre was highest for apples which required 287 hours, followed by sweet cherries with 277 hours, prunes 230 hours, peaches 147 hours, and sour cherries 141 hours.

LABOR REQUIREMENTS FOR LIVESTOCK

In some instances, records for two or more type-of-farming areas were combined in summarizing the data on the amount of labor used on different kinds of livestock. Information from the United States Census on numbers of livestock in the different counties and areas and by size of herd or flock was used as a weight in combining the survey data into State averages. Records of labor requirements for livestock were not obtained in the Southeastern Dry-land Area. The livestock in this area was included with those in the range areas in computing the State averages.

Milk Cows

Man-hours required per milk cow varied from 129 in the irrigated areas to 186 in the range areas, with a State average of 136 hours (table 19). Dairying is a more important and more commercialized enterprise in the irrigated areas, particularly the Southwestern Irrigated Area, than it is in the dry-land and range areas. According to the 1950 Census, there are fewer milk cows per farm than the number indicated in table 19, but both sources agree that herds are larger in the irrigated areas. Greater proportions of the cows are milked by machine in the irrigated areas and more attention is given to methods and practices that take fewer man-hours per cow. On many farms and ranches in the dry-land farming and range areas, milk cows are kept primarily to supply products for home use and usually family labor is utilized in caring for them.

Milk production per cow is highest - around 6,500 pounds a year - in the irrigated areas. This high production, coupled with the relatively low labor requirements per cow, results in few man-hours per 100 pounds of milk.

The amount of labor required per milk cow as related to certain factors, such as size of herd, is shown in table 20. Within the group of from 5 to 14 milk cows per herd, an average of 8 cows in herds were milked by hand, and 10 cows in those milked by machine. These two additional cows per herd had a lowering influence on man-hours per cow. On the other hand, machine-milked herds produced an average of 1,200 more pounds

of milk per cow, and this meant more labor. If these influences approximately offset each other, the use of milking machines saved approximately 50 man-hours per cow per year. In herds of 8 to 10 cows, this would mean a saving of 400 to 500 man-hours per herd. As the average herd milked by machine consisted of more than 10 cows, the difference between the number of hours spent on milk cows and the hours that would be required if all milking were done by hand amounts to more than 500 man-hours per herd.

Man-hours required per 100 pounds of milk in the large herds were only 1.56. This was less than half the requirement in the smallest herds (1 to 4 cows), owing to fewer man-hours per cow and greater production per cow.

Cattle Other Than Milk Cows

Man-hours required to feed and care for a beef cow for a year and her calf up to weaning time varied from 19 in the Northern Cutover and Northern Wheat areas, to 13 in the irrigated areas in the southern part of the State (table 21). An average of 15 hours was required per beef cow in the range area. The State average was 17 hours a cow.

According to these labor requirement records, more time was spent on young dairy stock than on young beef cattle. Consequently, the relative importance of dairy and beef cattle in an area influences the average man-hours per head for all young cattle. Fewest hours were required in the range areas - 11 hours a head - and most in the irrigated areas, in which many of the animals were young dairy stock. The State average labor requirement of all cattle other than milk and beef cows was 15 hours per head.

Quite a few cattle were fattened on concentrated feed in the irrigated sections of the State. Labor required to care for these cattle in feed lots amounted to 1.4 hours a head a month in the Southwestern Irrigated Area and 1.6 hours p head in the South Central Irrigated and Upper Snake Areas.

Hogs

Production of pork is not an important enterprise on many farms in the State. Only 29 of the 158 farmers for whom a livestock questionnaire was completed reported keeping sows and raising pigs. An additional number reported the purchase of feeder pigs. Because of few records, labor requirements for hogs are shown for only two parts of the State (table 22).

An average of 80 man-hours was required to care for a sow and her litters in 1950. This equals between 3 1/4 and 3 1/2 hours per 100 pounds of pork produced. Man-hours per sow were higher in the northern part of the State but the pigs were marketed at heavier weights. Consequently, man-hours per unit of pork produced were nearly the same in both northern and southern Idaho.

The data in table 23 indicate that there were substantial savings in time requirements for hog production on farms having a relatively large number of sows. On farms on which there were 4 or fewer sows per herd it took a little more than 100 hours to care for a sow and her litters. Only 61 hours were required per sow and litters when there was an average of 9 sows per farm.

Chickens

In 1950, the number of hens per farm in the State averaged 50 (table 24). It required about 116 man-hours to care for this flock or 2.33 hours per hen. Man-hours per hen varied from a high of 2.53 in the northern part of the State to 2.25 in the southern irrigated areas. Despite the higher labor requirement per hen in the northern part of the State, man-hours per 100 eggs were lowest because of the greater number of eggs produced per hen. The rate of lay was 165 eggs per hen in these areas, 142 in the southern irrigated areas, and 107 eggs in the range areas, with a State average of 145 eggs per hen.

The size of the laying flock influenced the man-hours required per hen. It took 2.81 man-hours to care for a hen or pullet in small flocks and 1.96 hours, or about 70 percent as much, for those in large flocks (table 25). The hens in large flocks also produced almost two dozen more eggs per year. About 60 percent as many man-hours were required per 100 eggs in large as in small flocks.

An average of 59 man-hours of labor was needed to raise 100 chickens in the State in 1950 (table 26). Labor requirements were highest in the range areas but chickens were an unimportant enterprise there and these areas influenced the State average very little. Chickens were more important in the irrigated areas, and man-hour requirements were lowest. They averaged 0.63 hour per chick raised in the Southwestern Irrigated Area and 0.53 hour per bird in the South Central Irrigated and Upper Snake Areas.

LABOR REQUIREMENTS FOR FARM MAINTENANCE

An average of a little more than 5,100 hours was spent per farm at all farm work in the State (table 27). About a sixth of the time, 845 hours, was spent doing farm-maintenance jobs or overhead work. Man-hours for all farm work per farm varied from 3,849 hours in the northern part of the State to between 5,700 and 5,800 hours in the range and southern irrigated areas. The number of man-hours for farm maintenance work was also lowest in northern areas, but there was less difference among areas in man-hours for farm maintenance work than for all farm work.

Almost a fourth of the 845 hours required for overhead work was for farm business trips. Another 23 percent was needed to repair and maintain farm machinery, including tractors, trucks, and the farm share of automobiles. Constructing and maintaining farm buildings took 15 percent of the farm-maintenance time and construction, and maintenance of fences and of irrigation structures each took a little more than 11 percent. Conducting the farm business took 6.6 percent of the overhead time. Jobs that required less than 5 percent each included soil and moisture conservation work not a part of a regular crop operation, work on permanent pasture, time spent in farm woodlots, and construction and maintenance of drainage structures and other miscellaneous farm-maintenance jobs such as mowing weeds along roadsides and in fence rows, and maintaining farm roads and lanes.

Table 1.- Alfalfa hay: Man-and power-hours per acre in indicated areas of Idaho, 1950

Operation	South Central Irrigated				Upper Snake				North Central Range				South Central Range				Southwestern Irrigated				Northern Cutover				Northern Wheat			
	Number of records - 14 Yield per acre(tons) - 3.9 Years crop is left down - 5.0				Number of records - 12 Yisld per acre (tons) - 2.7 Years crop is left down - 3.1				Number of records - 12 Yield per acre (tons) - 1.6 Years crop is left down - 7.2				Number of records - 10 Yield per acre (tons) - 2.5 Years crop is left down - 4.0				Number of records - 14 Yield per acre (tons) - 3.6 Years crop is left down - 5.2				Number of records - 8 Yield per acre (tons) - 1.7 Years crop is left down - 5.6				Number of records - 28 Yield per acre (tons) - 1.3 Years crop is left down - 5.0			
	Acres covered	Times over	Man-hours per acre once over	Average hours per acre	Acres covered	Times over	Man-hours per acre once over	Average hours per acre	Acres covered	Times over	Man-hours per acre once over	Average hours per acre	Acres covered	Times over	Man-hours per acre once over	Average hours per acre	Acres covered	Times over	Man-hours per acre once over	Average hours per acre	Acres covered	Times over	Man-hours per acre once over	Average hours per acre	Acres covered	Times over	Man-hours per acre once over	Average hours per acre
	Pct.	No.	Hrs.	Hrs.	Pct.	No.	Hrs.	Hrs.	Pct.	No.	Hrs.	Hrs.	Pct.	No.	Hrs.	Hrs.	Pct.	No.	Hrs.	Hrs.	Pct.	No.	Hrs.	Hrs.	Pct.	No.	Hrs.	Hrs.
Seeded alone	(20)				(0)				(86)				(35)				(11)				(100)				(70)			
Plow	10	1.0	0.57	0.06	-	-	-	-	78	1.0	1.21	0.94	30	1.0	1.53	0.46	1	1.0	1.80	0.02	75	1.0	2.06	1.54	70	1.0	0.57	0.40
Disk 1/	10	1.0	.23	.02	-	-	-	-	59	1.5	.60	.53	15	1.5	.39	.09	10	1.0	.42	.04	100	1.9	.87	1.65	54	1.1	.32	.19
Spring-tooth harrow	-	-	-	-	-	-	-	-	27	1.5	.68	.28	20	2.0	.39	.16	-	-	--	-	-	-	-	-	30	1.7	.20	.10
Spike-tooth harrow	-	-	-	-	-	-	-	-	72	2.1	.42	.64	25	2.0	.36	.18	9	1.5	.25	.03	100	2.6	.43	1.12	70	2.6	.15	.27
Fertilize	20	1.0	.20	.04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	95	1.0	.35	.33	-	-	-	-
Float or level	20	1.0	.20	.04	-	-	-	-	20	1.0	.40	.08	15	1.5	.64	.14	4	1.0	.40	.02	-	-	-	-	-	-	-	-
Cultipack	-	-	-	-	-	-	-	-	25	1.3	.39	.13	-	-	-	-	-	-	-	-	12	1.0	.53	.06	18	1.3	.22	.05
Seed by hand 2/	-	-	-	-	-	-	-	-	8	1.0	.40	.03	-	-	-	-	10	1.0	.78	.08	38	1.0	.45	.17	-	-	-	-
Seed with drill	20	1.0	.33	.07	-	-	-	-	78	1.0	.61	.48	35	1.0	.48	.17	1	1.0	.45	-	62	1.0	.45	.28	70	1.0	.26	.18
Cultipack or harrow	-	-	-	-	-	-	-	-	19	1.0	.67	.13	-	-	-	-	-	-	-	-	50	1.0	.33	.16	8	1.0	.12	.01
Corrugate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Irrigate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Seeded on companion crop 3/	(0)				(25)				(0)				(50)				(39)				(0)				(11)			
Seed by hand 2/	-	-	-	-	25	1.0	0.60	0.15	-	-	-	--	-	-	-	-	32	1.0	.68	.22	-	-	-	-	-	-	-	-
Seed with drill	-	-	-	-	-	---	-	-	-	-	-	-	50	1.0	.32	.16	7	1.0	.44	.03	-	-	-	-	11	1.0	.37	.04
Cultipack or harrow	-	-	-	-	10	1.0	.25	.02	-	-	-	-	20	1.0	.46	.09	-	-	-	-	-	-	-	-	4	1.0	.38	.02
Corrugate	-	-	-	-	-	---	-	-	-	-	-	-	10	1.0	.50	.05	-	-	-	-	-	-	-	-	-	-	-	-
Irrigate	-	-	-	-	19	1.0	.64	.12	-	-	-	-	20	2.0	1.30	.52	7	2.0	.45	.06	-	-	-	-	-	-	-	-
Seeded with companion crop 4/	(80)				(75)				(14)				(15)				(50)				(0)				(19)			
Total seeding	(100)			.23	(100)			.29	(100)			3.24	(100)			2.02	(100)			.50	(100)			5.31	(100)			1.26
Total seeding (annual basis)				.05				.09				.45				.50				.10				.95				.25
Annual care																												
Fertilize	21	1.0	.30	.06	-	-	-	-	8	1.0	.49	.04	28	1.0	.61	.17	-	-	-	-	42	1.0	.35	.15	5	1.0	.21	.01
Corrugate	21	1.3	.44	.12	-	-	-	-	8	1.0	.67	.05	15	1.0	.47	.07	20	1.0	.50	.10	-	-	-	-	-	-	---	-
Irrigate	100	5.7	1.71	9.75	100	6.8	1.59	10.81	15	2.0	.84	.25	70	5.0	.80	2.80	100	4.8	1.74	8.35	-	-	-	-	-	-	-	-
Dust	-	-	-	-	-	-	-	-	-	-	-	-	15	1.0	.18	.03	-	-	-	-	-	-	-	-	-	-	-	-
Spring-tooth harrow	-	-	-	-	-	-	-	-	-	-	-	-	40	1.5	.42	.25	18	1.7	.39	.12	-	-	-	-	-	-	---	---
Total preharvest				9.98				10.90				.79				3.82				8.67				1.10				.26
Harvest																												
Mow	100	2.9	.55	1.60	100	2.0	.60	1.20	100	1.4	.67	.94	100	2.4	.42	1.01	100	2.9	.56	1.62	100	1.8	.61	1.10	100	1.1	.53	.58
Rake	100	2.9	.55	1.60	100	2.0	.57	1.14	100	1.4	.53	.74	100	2.4	.42	1.01	100	3.1	.47	1.46	100	1.8	.45	.81	100	1.1	.51	.56
Bunch or shock	4	2.9	.16	.02	58	2.0	.75	.87	8	1.4	.67	.08	45	2.4	.96	.60	18	2.9	.34	.18	-	-	-	---	8	1.1	1.58	.14
Store loose hay	26	2.9	2.87	2.16	67	2.0	3.11	4.17	35	1.4	2.51	1.23	41	2.4	2.21	2.17	49	2.9	2.79	3.96	70	1.8	3.35	4.22	25	1.1	2.90	.80
Pick-up bale and store	63	2.9	3.23	5.90	33	2.0	3.21	2.12	57	1.4	2.84	2.27	49	2.4	2.56	3.01	26	2.9	2.79	2.10	30	1.8	3.32	1.79	65	1.1	3.11	2.22
Pick-up chop and store	11	2.9	2.66	.85	-	-	-	-	-	-	-	-	-	---	-	-	25	2.9	2.43	1.76	-	-	-	-	3	1.1	2.47	.08
Stationary chop and store	-	-	-	-	-	-	-	-	8	1.4	3.17	.36	10	2.4	2.95	.71	-	-	-	-	-	-	-	-	7	1.1	3.17	.24
Total harvest				12.13				9.50				5.62				8.51				11.08				7.92				4.62
Total man-hours				22.11				20.40				6.41				12.33				19.75				9.02				4.88
Total tractor-hours				7.29				4.47				3.09				5.60				6.40				3.53				2.38
Total truck-hours				1.12				.63				.41				.26				.48				.94				.59
Total horse-hours				-				1.98				.95				.50				1.48				2.92				.11

1/ Includes disk and harrow and disk and cultipack as one operation.

2/ Includes broadcast by hand and with hand seeder.

3/ Seeded on the growing companion crop, usually a small grain.

4/ Seeded with the companion crop as one operation; no labor charged to alfalfa.

Table 2.- Clover and Timothy Hay: Man-and power-hours per acre in indicated areas of Idaho, 1950

Operation	Northern Cutover: Number of records - 20; Yield per acre (tons) - 1.4; Years crop is left down - 3.8				North Central Range: Number of records - 9; Yield per acre (tons) - 1.3; Years crop is left down - 7.2			
	Acres covered	Times over	Man-hours per acre once over	Average hours per acre	Acres covered	Times over	Man-hours per acre once over	Average hours per acre
	Pct.	No.	Hrs.	Hrs.	Pct.	No.	Hrs.	Hrs.
Seeded alone	(69)				(67)			
Plow	57	1.0	1.69	0.96	67	1.0	1.22	0.82
Disk 1/	61	2.1	.91	1.17	42	1.8	.71	.54
Spring-tooth harrow	19	1.8	.84	.29	25	1.0	.62	.16
Spike-tooth harrow	55	2.0	.50	.55	58	2.2	.51	.65
Cultipack	29	1.7	.70	.35	54	1.0	.39	.21
Seed by hand 2/	16	1.2	.47	.09	--	--	--	--
Seed with drill	53	1.0	.52	.28	67	1.0	.64	.43
Cultipack or harrow	14	1.3	.44	.08	38	1.0	.57	.22
Seeded on companion crop 3/	(8)				(0)			
Seed by hand 2/	5	1.0	.50	.02	--	--	--	--
Seed with drill	3	1.0	.32	.01	--	--	--	--
Cultipack or harrow	7	1.0	.49	.03	--	--	--	--
Seeded with companion crop 4/	(23)				(33)			
Total seeding	(100)			3.83	(100)			3.03
Total seeding(annual basis)				1.01				.42
Annual care								
Fertilize	15	1.0	.35	.05	6	1.0	.32	.02
Irrigate	--	--	--	--	19	2.0	.90	.34
Total preharvest				1.06				.78
Harvest								
Mow	100	1.3	.70	.91	100	1.3	.57	.74
Rake	100	1.3	.50	.65	100	1.3	.52	.68
Bunch or shock	5	1.0	3.00	.15	--	--	--	--
Store loose hay	56	1.3	3.77	2.74	38	1.3	1.80	.89
Pick-up bale and store	44	1.3	3.75	2.14	62	1.3	3.29	2.65
Total harvest				6.59				4.96
Total man-hours				7.65				5.74
Total tractor-hours				3.62				3.26
Total truck-hours				.39				.17
Total horse-hours				2.67				.09

1/ Includes disk and harrow and disk and cultipack as one operation.
2/ Includes broadcast by hand and with hand seeder.
3/ Seeded on the growing small-grain companion crop.
4/ Seeded with the companion crop as one operation; no labor charged to clover and timothy hay.

Table 3.- Summer Fallow: Man-and power-hours per acre in indicated areas of Idaho, 1950

Operation	Northern Wheat				Southeastern Dry-land				Upper Snake			
	Number of records - 16				Number of records - 11				Number of records - 10			
	Acres covered	Times over	Man-and tractor-hours per acre: Once over	Man-and tractor-hours per acre: Average	Acres covered	Times over	Man-and tractor-hours per acre: Once over	Man-and tractor-hours per acre: Average	Acres covered	Times over	Man-and tractor-hours per acre: Once over	Man-and tractor-hours per acre: Average
	Percent	Number	Hours	Hours	Percent	Number	Hours	Hours	Percent	Number	Hours	Hours
Moldboard plow	97	1.0	0.62	0.60	68	1.0	0.42	0.29	52	1.0	0.46	0.24
Disk-tiller 1/	6	1.0	.45	.03	60	1.0	.35	.21	47	1.2	.20	.11
Disk	59	1.2	.31	.22	29	1.0	.18	.05	55	1.0	.12	.07
Spring-tooth harrow	75	2.3	.22	.38	--	--	--	--	--	--	--	--
Spike-tooth harrow	62	2.9	.13	.23	25	1.1	.10	.03	20	1.0	.10	.02
Rod weed	66	2.8	.16	.30	100	2.4	.15	.36	100	2.3	.13	.30
Total				1.76				.94				.74

1/ Includes all one-way disk-tillers and duckfoot type cultivators.

Table 4.- Winter wheat: Man-and power-hours per acre in indicated areas of Idaho, 1950

Operation	Northern Cutover: Number of records - 6; Yield per acre(bu.)- 22				Northern Wheat: Number of records - 35; Yield per acre(bu.)- 31				Southeastern Dry-land: Number of records - 11; Yield per acre(bu.)- 21				Upper Snake: Number of records -10; Yield per acre(bu.)-22			
	Acres covered	Times over	Man-hours per acre once over	Average hours per acre	Acres covered	Times over	Man-hours per acre once over	Average hours per acre	Acres covered	Times over	Man-hours per acre once over	Average hours per acre	Acres covered	Times over	Man-hours per acre once over	Average hours per acre
	Pct.	No.	Hrs.	Hrs.	Pct.	No.	Hrs.	Hrs.	Pct.	No.	Hrs.	Hrs.	Pct.	No.	Hrs.	Hrs.
Summer fallow 1/	-	-	-	-	26			0.46	100			0.94	100			0.74
Plow	100	1.0	1.38	1.38	54	1.0	0.64	.35								
Disk 2/	92	2.2	.61	1.23	46	1.1	.36	.18								
Spike-tooth harrow	83	2.4	.28	.56	59	1.9	.14	.16								
Spring-tooth harrow	25	1.5	.60	.22	38	1.5	.26	.15								
Rod weed 3/	-	-	-	-	17	1.4	.29	.07								
Drill 4/	100	1.0	.51	.51	100	1.0	.22	.22	100	1.0	0.15	.15	100	1.0	0.12	.12
Harrow 5/	50	1.0	.52	.26	25	1.0	.19	.05	48	1.0	.20	.10	74	1.0	.08	.06
Fertilize	25	1.0	.40	.10	-	-	-	-	-	-	-	-	-	-	-	-
Clip rye	-	-	-	-	-	-	-	-	6	1.0	.32	.02	-	-	-	-
Rogue	-	-	-	-	-	-	-	-	2	1.0	.29	.01	-	-	-	-
Spray 6/	-	-	-	-	20	1.1	.22	.05	5	1.0	.44	.02	-	-	-	-
Total preharvest				4.26				1.69				1.24				.92
Combine 7/	100	1.0	1.41	1.41	100	1.0	1.36	1.36	100	1.0	1.04	1.04	100	1.0	1.03	1.03
Total man-hours				5.67				3.05				2.28				1.95
Total tractor-hours				5.15				2.15				1.54				1.22
Total truck-hours				.49				.58				.58				.46

1/ For summer fallow by operations see table 3. 2/ Includes disk and harrow, and disk and cultipack as one operation. 3/ Includes duckfoot type cultivators. 4/ Includes rod weeding and drilling, drilling and harrowing, and drilling and cultipacking as one operation. 5/ Includes cultipacking. 6/ Excludes spraying with airplane. 7/ Includes hauling grain.

Table 5.- Spring Wheat: Man-and power-hours per acre in indicated areas of Idaho, 1950

Operation	Northern Wheat: Number of records - 9; Yield per acre (bu.)- 23				Southwestern Irrigated: Number of records - 12; Yield per acre (bu.)- 40				Upper Snake: Number of records - 15; Yield per acre (bu.)- 35			
	Acres covered	Times over	Man-hours per acre once over	Average hours per acre	Acres covered	Times over	Man-hours per acre once over	Average hours per acre	Acres covered	Times over	Man-hours per acre once over	Average hours per acre
	Pct.	No.	Hrs.	Hrs.	Pct.	No.	Hrs.	Hrs.	Pct.	No.	Hrs.	Hrs.
Rake and burn	-	-	-	-	-	-	-	-	5	1.0	0.33	0.02
Spread manure	-	-	-	-	-	-	-	-	1	1.0	5.00	.05
Disk before plowing	17	1.0	0.39	0.07	6	1.5	0.54	0.05	1	1.0	.50	-
Plow	91	1.0	.57	.52	81	1.0	1.81	1.47	39	1.0	1.54	.60
Disk 1/	59	1.1	.34	.22	61	1.2	.53	.39	72	1.3	.54	.51
Rod weed 2/	56	2.3	.18	.23	-	-	-	-	8	1.0	.62	.05
Spring-tooth harrow	23	1.0	.25	.06	17	1.5	.75	.19	-	-	-	-
Spike-tooth harrow	93	2.5	.12	.28	99	2.2	.26	.57	87	2.3	.35	.70
Float or level	-	-	-	-	76	1.4	.53	.56	87	1.0	.40	.35
Fertilize	1	1.0	.30	-	4	1.0	.45	.02	1	1.0	.50	-
Drill	100	1.0	.19	.19	100	1.0	.59	.59	100	1.0	.51	.51
Harrow 3/	31	1.0	.11	.03	8	2.0	.20	.03	3	1.0	.33	.01
Corrugate	-	-	-	-	100	1.0	.51	.51	100	1.0	.32	.32
Irrigate	-	-	-	-	100	3.4	1.13	3.84	100	3.7	1.55	5.74
Spray 4/	5	1.0	.14	.01	2	1.0	.40	.01	2	1.0	.33	.01
Total preharvest				1.61				8.23				8.87
Combine 5/	100	1.0	1.16	1.16	88	1.0	2.15	1.89	54	1.0	3.19	1.72
Bind	-	-	-	-	12	1.0	1.41	.17	46	1.0	1.23	.57
Shock	-	-	-	-	12	1.0	1.46	.18	46	1.0	1.12	.52
Thresh 5/	-	-	-	-	12	1.0	6.75	.81	46	1.0	5.74	2.64
Total harvest				1.16				3.05				5.45
Total man-hours				2.77				11.28				14.32
Total tractor-hours				2.00				5.22				4.28
Total truck-hours				.54				1.00				1.25
Total horse-hours				-				1.08				3.21

1/ Includes disk and harrow and disk and cultipack as one operation. 2/ Includes duckfoot type cultivators. 3/ Includes cultipacking. 4/ Excludes spraying with airplane. 5/ Includes hauling grain.

Table 6.- Oats and Barley: Man-and power-hours per acre in indicated areas of Idaho, 1950

Operation	Northern Cutover				Northern Wheat				North Central Range			
	Number of records - 28				Number of records - 45				Number of records - 22			
	Yield per acre-barley(bu)- 31				Yield per acre-barley(bu)- 30				Yield per acre-barley(bu)- 30			
	Yield per acre-oats (bu)- 39				Yield per acre-oats (bu)- 39				Yield per acre-oats (bu)- 36			
	Acres covered	Times over	Man-hrs. per acre once over	Average hours per acre	Acres covered	Times over	Man-hrs. per acre once over	Average hours per acre	Acres covered	Times over	Man-hrs. per acre once over	Average hours per acre
	Pct.	No.	Hrs.	Hrs.	Pct.	No.	Hrs.	Hrs.	Pct.	No.	Hrs.	Hrs.
Spread manure	4	1.0	2.67	0.11	-	-	-	-	-	-	-	-
Disk before plowing	-	-	-	-	1	1.0	0.53	0.01	-	-	-	-
Plow	99	1.0	1.45	1.44	93	1.0	.64	.60	90	1.0	1.14	1.03
Disk	94	2.1	.63	1.24	49	1.1	.35	.19	65	1.2	.58	.45
Disk and harrow 1/	-	-	-	-	9	1.0	.30	.03	5	1.0	.67	.03
Rod weed 2/	-	-	-	-	18	1.5	.27	.07	5	1.0	.40	.02
Spring-tooth harrow	14	1.8	.55	.14	49	1.3	.26	.17	28	1.3	.67	.24
Spike-tooth harrow	86	1.9	.28	.46	81	1.9	.13	.20	90	1.8	.40	.65
Float or level 3/	10	2.5	.77	.19	--	-	-	-	55	1.1	.50	.30
Dike or corrugate	-	-	-	-	-	-	-	-	5	1.0	.67	.03
Fertilize	16	1.0	.35	.06	-	-	-	-	-	-	-	-
Drill	100	1.0	.50	.50	100	1.0	.22	.22	100	1.0	.53	.53
Harrow 4/	55	1.0	.45	.25	31	1.0	.20	.06	28	1.0	.49	.14
Irrigate	--	-	-	-	-	-	-	-	15	1.0	.82	.12
Spray 5/	--	-	-	-	11	1.3	.26	.04	-	-	-	-
Total preharvest				4.39				1.59				3.54
Combine 6/	91	1.0	1.50	1.36	100	1.0	1.38	1.38	100	1.0	1.93	1.93
Bind	9	1.0	.83	.07	-	-	-	-	-	-	-	-
Shock	9	1.0	1.11	.10	-	-	-	-	-	-	-	-
Thresh 6/	9	1.0	4.19	.38	-	-	-	-	-	-	-	-
Total harvest				1.91				1.38				1.93
Total man-hours				6.30				2.97				5.47
Total tractor-hours				5.22				2.07				4.23
Total truck-hours				.58				.63				.58
Total horse-hours				.40				-				.46

Continued -

Table 6.- Oats and Barley: Man-and power-hours per acre in indicated areas of Idaho, 1950 - cont'd.

Operation	Southwestern Irrigated: Number of records - 12; Yield per acre-barley (bu.) - 45; Yield per acre -oats (bu.) - 50				Upper Snake: Number of records - 6; Yield per acre - barley (bu.) - 39; Yield per acre - oats (bu.) - 45			
	Acres covered	Times over	Man-hours per acre once over	Average hours per acre	Acres covered	Times over	Man-hours per acre once over	Average hours per acre
	Percent	Number	Hours	Hours	Percent	Number	Hours	Hours
Spread manure	-	-	-	-	-	-	-	-
Disk before plowing	4	2.0	0.40	0.03	2	1.0	0.50	0.01
Plow	96	1.0	1.82	1.75	68	1.0	1.31	.89
Disk	25	1.2	.49	.15	36	1.8	.44	.29
Disk and harrow 1/	-	-	-	-	36	1.5	.34	.18
Rod weed 2/	-	-	-	-	7	1.0	.40	.03
Spring-tooth harrow	33	1.5	.75	.37	-	-	-	-
Spike-tooth harrow	99	3.0	.28	.83	64	2.0	.42	.54
Float or level 3/	92	1.6	.52	.77	68	1.0	.38	.26
Dike or corrugate	100	1.0	.44	.44	100	1.0	.22	.22
Fertilize	2	1.0	.40	.01	1	1.0	.50	-
Drill	100	1.0	.56	.56	100	1.0	.45	.45
Harrow 4/	-	-	-	-	27	1.0	.18	.05
Irrigate	100	3.4	.65	2.21	100	3.9	.92	3.59
Spray 5/	2	1.0	.40	.01	5	1.0	.33	.02
Total preharvest				7.13				6.53
Combine 6/	89	1.0	2.50	2.22	37	1.0	2.30	.85
Bind	11	1.0	1.22	.13	63	1.0	1.03	.65
Shock	11	1.0	1.25	.14	63	1.0	1.08	.68
Thresh 6/	11	1.0	7.10	.78	63	1.0	6.63	4.18
Total harvest				3.27				6.36
Total man-hours				10.40				12.89
Total tractor-hours				6.18				3.98
Total truck-hours				.87				1.20
Total horse-hours				1.18				3.82

1/ Includes disking and cultipacking as one operation. 2/ Includes duckfoot-type cultivators.
3/ Cultipacking in nonirrigated areas. 4/ Includes cultipacking. 5/ Excludes spraying with airplane.
6/ Includes hauling grain.

Table 7.--Sugar Beets: Man-and power-hours per acre in indicated areas of Idaho, 1950

Operation	Southwestern Irrigated: Number of records - 17; Yield per acre (tons) - 22.0				South Central Irrigated: Number of records 16; Yield per acre (tons) - 17.5				Upper Snake: Number of records - 7; Yield per acre (tons) --12.1			
	Acres covered	Times over	Man-hours per acre once over:	Average hours per acre	Acres covered	Times over	Man-hours per acre once over:	Average hours per acre	Acres covered	Times over	Man-hours per acre once over:	Average hours per acre
	Percent	Number	Hours	Hours	Percent	Number	Hours	Hours	Percent	Number	Hours	Hours
Spread manure	3	1.0	12.00	0.36	36	1.0	12.95	4.66	-	-	-	-
Disk before plowing	12	1.5	.83	.15	16	1.3	.44	.09	14	1.0	0.50	0.07
Plow	94	1.0	1.77	1.66	86	1.0	1.74	1.50	73	1.0	1.55	1.13
Disk	81	1.3	.46	.48	81	1.3	.53	.56	41	1.2	.47	.23
Spring-tooth harrow	3	1.0	1.00	.03	3	1.0	.20	.01	-	-	-	-
Spike-tooth harrow	100	2.5	.26	.65	100	3.4	.37	1.26	100	3.9	.34	1.33
Float or level	100	1.7	.52	.88	86	1.2	.38	.39	100	1.4	.54	.76
Fertilize	16	1.0	.80	.13	51	1.3	.46	.30	14	1.0	.50	.07
Mark	18	1.0	.78	.14	-	-	-	-	-	-	-	-
Plant 1/	100	1.1	.86	.95	100	1.0	.89	.89	100	1.0	.75	.75
Finger weeder	3	1.0	.41	.01	-	-	-	-	-	-	-	-
Harrow or cultipack	32	1.0	.37	.12	16	1.0	.59	.09	-	-	-	-
Block and thin	100	1.0	13.60	13.60	100	1.0	15.61	15.61	100	1.0	16.60	16.60
Side dress	44	1.5	.57	.38	9	1.0	.67	.06	-	-	-	-
Cultivate (first)	100	1.0	1.08	1.08	100	1.0	.86	.86	100	1.0	.85	.85
" (second)	100	1.0	1.07	1.07	100	1.0	.84	.84	100	1.0	.83	.83
" (other)	100	4.5	.87	3.92	100	3.8	.77	2.93	100	4.6	.83	3.82
Irrigate	100	8.6	1.70	14.62	100	7.9	1.14	9.01	100	7.1	1.33	9.44
Hoe	100	2.2	8.29	18.24	100	1.9	7.33	14.93	100	2.0	8.48	16.96
Dust	6	1.0	.25	.02	-	-	-	-	-	-	-	-
Total preharvest				58.49				53.99				52.84
Roto-beater	39	1.4	2.07	1.13	34	1.2	2.27	.93	14	1.0	2.00	.28
Lift	39	1.0	2.23	.87	27	1.0	2.32	.63	33	1.0	2.50	.82
V-out	39	1.0	.95	.37	-	-	-	-	-	-	-	-
Top by hand	39	1.0	25.30	9.87	27	1.0	20.65	5.58	33	1.0	14.88	4.91
Lift, top, windrow 2/	6	1.0	4.40	.26	9	1.0	4.38	.39	10	1.0	3.75	.38
Hand load and haul	8	1.0	13.20	1.06	27	1.0	10.85	2.93	33	1.0	7.86	2.59
Mech. load and haul	37	1.0	7.70	2.85	9	1.0	7.00	.63	10	1.0	5.81	.58
Lift, top, load, haul 3/	55	1.0	15.40	8.47	64	1.0	14.00	8.96	57	1.0	11.50	6.56
Total harvest				24.88				20.05				16.12
Total man-hours				83.37				74.04				68.96
Total tractor-hours				17.71				16.69				14.07
Total truck-hours				6.46				7.63				6.98
Total horse-hours				.44				1.10				-

1/ Includes planting and fertilizing, and planting and currugating as one operation. 2/ Windrow-type mechanical harvester.
3/ Trailer or pull-type mechanical harvester.

Table 8.- Potatoes: Man-and power-hours per acre in indicated areas of Idaho, 1950

Operation	Southwestern Irrigated: Number of records - 11; Yield per acre (bu.) - 329				South Central Irrigated: Number of records - 12; Yield per acre (bu.) - 295				Upper Snake: Number of records - 11; Yield per acre (bu.) - 227			
	Acres covered	Times over	Man-hours per acre once over	Average hours per acre	Acres covered	Times over	Man-hours per acre once over	Average hours per acre	Acres covered	Times over	Man-hours per acre once over	Average hours per acre
	Pct.	No.	Hrs.	Hrs.	Pct.	No.	Hrs.	Hrs.	Pct.	No.	Hrs.	Hrs.
Crown alfalfa	-	-	-	-	2	1.0	1.67	0.03	11	1.0	1.50	0.16
Spread manure	-	-	-	-	17	1.0	3.68	.63	13	1.0	7.00	.91
Plow	100	1.0	1.63	1.63	100	1.0	1.84	1.84	100	1.0	1.69	1.69
Disk	99	1.7	.45	.76	90	1.9	.50	.86	54	1.2	.54	.35
Spring-tooth harrow	-	-	-	-	19	1.3	.40	.10	-	-	-	-
Spike-tooth harrow	100	2.5	.24	.60	100	3.1	.34	1.05	82	2.8	.30	.69
Float or level	95	1.5	.54	.77	42	1.2	.50	.25	25	1.0	.42	.10
Fertilize	36	1.0	.73	.26	42	1.0	.36	.15	-	-	-	-
Corrugate	18	1.0	.58	.10	42	1.0	.57	.24	18	1.0	.58	.10
Cut and treat seed	100	1.0	6.09	6.09	100	1.0	6.74	6.74	100	1.0	6.25	6.25
Plant	100	1.0	1.30	1.30	100	1.0	1.46	1.46	100	1.0	1.53	1.53
Harrow	27	1.3	.33	.12	8	1.0	.29	.02	17	1.0	.34	.06
Cultivate	100	5.0	.81	4.05	100	3.7	.91	3.37	100	5.5	.76	4.18
Irrigate	100	6.3	1.42	8.95	100	8.9	1.32	11.75	100	8.5	1.26	10.71
Weeder	9	2.0	.50	.09	-	-	-	-	-	-	-	-
Hoe	25	1.3	6.50	2.11	-	-	-	-	14	1.0	5.00	.70
Total preharvest 1/				26.83				28.49				27.43
Roto-beater	23	1.3	1.25	.37	25	1.0	1.31	.33	9	1.0	1.30	.12
Dig	100	1.0	2.63	2.63	100	1.0	2.74	2.74	48	1.0	2.93	1.41
Pick up	100	1.0	20.17	20.17	100	1.0	18.58	18.58	48	1.0	14.53	6.97
Haul	100	1.0	7.44	7.44	100	1.0	6.99	6.99	48	1.0	5.20	2.50
Harvest and haul 2/	-	-	-	-	-	-	-	-	52	1.0	18.22	9.47
Total harvest				30.61				28.64				20.47
Total man-hours				57.44				57.13				47.90
Total tractor-hours				11.72				11.90				11.00
Total truck-hours				3.82				2.55				2.59
Total horse-hours				-				1.15				.92

1/ Excludes dusting with airplane. 2/ Harvesting with potato combine.

Table 9.- Dry Beans: Man-and power hours per acre in indicated areas of Idaho, 1950

Operation	Northern Wheat: Number of records - 7; Yield per acre (lbs.) - 392				Southwestern Irrigated: Number of records - 8; Yield per acre (lbs.)-1,764				South Central Irrigated: Number of records - 15; Yield per acre (lbs.)-1,859			
	Acres covered	Times over	Man-hrs. per acre: once over	Average hours per acre	Acres covered	Times over	Man-hrs. per acre: once over	Average hours per acre	Acres covered	Times over	Man-hrs. per acre: once over	Average hours per acre
	Pct.	No.	Hrs.	Hrs.	Pct.	No.	Hrs.	Hrs.	Pct.	No.	Hrs.	Hrs.
Spread manure	-	-	-	-	-	-	-	-	20	1.0	5.29	1.06
Plow	83	1.0	0.81	0.67	100	1.0	1.68	1.68	79	1.0	1.69	1.34
Chisel	31	1.0	.89	.28	-	-	-	-	-	-	-	-
Disk 1/	70	1.1	.42	.32	88	1.9	.62	1.04	73	1.9	.51	.71
Spring-tooth harrow	44	1.2	.27	.14	12	1.5	.82	.15	30	1.0	.43	.13
Spike-tooth harrow	94	2.4	.21	.47	100	3.8	.34	1.29	100	4.1	.22	.90
Float or level	-	-	-	-	100	2.5	.62	1.55	80	1.2	.33	.32
Fertilize	-	-	-	-	4	1.0	.40	.02	20	1.0	.44	.09
Corrugate	-	-	-	-	100	1.0	.38	.38	96	1.0	.46	.44
Irrigate	-	-	-	-	100	1.0	1.50	1.50	96	1.0	1.98	1.90
Plant 2/	100	1.0	.33	.33	100	1.0	.72	.72	100	1.0	.62	.62
Harrow	-	-	-	-	25	2.0	.26	.13	13	2.0	.20	.05
Cultivate	100	2.0	.57	1.14	100	4.2	.93	3.91	100	3.7	.75	2.78
Irrigate	-	-	-	-	100	4.0	1.33	5.32	100	4.2	1.88	7.90
Hoe	11	1.0	10.00	1.10	100	1.0	9.50	9.50	100	1.5	2.00	3.00
Total preharvest				4.45				27.19				21.24
Cut	100	1.0	.55	.55	100	1.0	.82	.82	100	1.0	.66	.66
Rake	86	1.0	.56	.48	100	1.0	.40	.40	100	1.0	.66	.66
Combine 3/	100	1.0	1.64	1.64	100	1.0	3.17	3.17	100	1.0	2.03	2.03
Total harvest				2.67				4.39				3.35
Total man-hours				7.12				31.58				24.59
Total tractor-hours				5.26				13.18				9.96
Total truck-hours				.23				.45				1.08

1/ Includes disking and harrowing as one operation. 2/ Includes planting and cultipacking as one operation.
3/ Includes hauling grain.

Table 10.- Dry Peas: Man-and power-hours per acre in the Northern Wheat area of Idaho, 1950

Operation	Number of records - 14; Yield per acre (lbs.) - 968			
	Acres covered	Times over	Man-hours per acre once over	Average hours per acre
	Pct.	No.	Hrs.	Hrs.
Plow	100	1.0	0.68	0.68
Disk 1/	46	1.0	.32	.15
Spring-tooth harrow	61	1.2	.28	.20
Spike-tooth harrow	76	1.6	.14	.17
Drill	71	1.0	.17	.12
Drill and cultipack 2/	29	1.0	.25	.07
Harrow 3/	50	1.0	.16	.08
Dust 4/	56	1.1	.17	.10
Total preharvest				1.57
Mow	7	1.0	.67	.05
Combine 5/	100	1.0	1.70	1.70
Total harvest				1.75
Total man-hours				3.32
Total tractor-hours				2.19
Total truck-hours				.59

1/ Includes disking and harrowing as one operation.
2/ Includes drilling and rodweeding as one operation.
3/ Includes cultipacking.
4/ Excludes dusting with airplane.
5/ Includes hauling grain.

Table 11.- Austrian Winter Pea Seed: Man-and power-hours per acre in the Northern Wheat area of Idaho, 1950

Operation	Number of records - 13; Yield per acre (lbs.) - 1,200			
	Acres covered	Times over	Man-hours per acre once over	Average hours per acre
	Pct.	No.	Hrs.	Hrs.
Plow	55	1.0	0.58	0.32
Disk tiller	15	1.0	.49	.07
Disk	49	1.2	.30	.18
Rod weed 1/	23	1.1	.18	.05
Spring-tooth harrow	42	1.8	.23	.17
Spike-tooth harrow	84	2.6	.11	.24
Fertilize	3	1.0	.30	.01
Cultipack	17	1.2	.16	.03
Drill	100	1.0	.18	.18
Harrow 2/	32	1.0	.12	.04
Dust 3/	3	1.2	.20	.01
Total preharvest				1.30
Mow	17	1.0	.43	.07
Combine 4/	100	1.0	1.81	1.81
Total harvest				1.88
Total man-hours				3.18
Total tractor-hours				2.01
Total truck-hours				.72

1/ Includes duckfoot-type cultivators.
2/ Includes cultipacking.
3/ Excludes dusting with airplane.
4/ Includes hauling grain.

Table 12.- Seed Peas: Man-and power-hours per acre in indicated areas of Idaho, 1950.

Operation	South Central Irrigated — Number of records - 12; Yield per acre (lbs.) - 1,976				Upper Snake — Number of records - 5; Yield per acre (lbs.) - 1,125			
	Acres	Times over	Man-hours per acre once over	Average hours per acre	Acres	Times over	Man-hours per acre once over	Average hours per acre
	Percent	Number	Hours	Hours	Percent	Number	Hours	Hours
Plow	81	1.0	1.89	1.53	26	1.0	2.36	0.61
Disk	83	1.2	.50	.50	100	1.1	.54	.59
Fertilize	40	1.0	.32	.13	-	-	-	-
Spread manure	8	1.0	8.00	.64	-	-	-	-
Harrow	100	3.4	.45	1.53	100	1.9	.28	.53
Float or level	50	1.0	.45	.22	75	1.0	.29	.22
Corrugate	50	1.0	.42	.21	100	1.0	.26	.26
Plant	52	1.0	.83	.43	-	-	-	-
Drill 1/	48	1.0	.49	.24	100	1.0	.73	.73
Cultivate	52	3.4	.87	1.54	-	-	-	-
Irrigate	100	3.8	1.80	6.84	100	3.5	1.74	6.09
Hoe	11	1.0	2.00	.22	-	-	-	-
Rogue	100	1.0	.42	.42	100	1.0	.40	.40
Total preharvest 2/				14.45				9.43
Cut and windrow	52	1.0	1.02	.53	95	1.0	.87	.83
Cut	48	1.0	.64	.31	5	1.0	.50	.02
Rake	48	1.0	.69	.33	5	1.0	.50	.02
Shock or pile	21	1.0	2.76	.58	40	1.0	1.34	.54
Thresh 3/	25	1.0	5.93	1.48	40	1.0	5.54	2.22
Combine 3/	75	1.0	2.54	1.90	60	1.0	2.58	1.55
Total harvest				5.13				5.18
Total man-hours				19.58				14.61
Total tractor-hours				8.98				4.55
Total truck-hours				.89				1.02
Total horse-hours				1.64				.98

1/ Includes some broadcasting. 2/ Excludes dusting with airplane. 3/ Includes hauling grain.

Table 13.- Fall Lettuce: Man-and power-hours per acre in the Southwestern Irrigated area of Idaho, 1950

Operation	Acres covered	Times over	Man-hours per acre once over	Average hours per acre
	Pct.	No.	Hrs.	Hrs.
Spread manure	12	1.0	8.00	0.96
Disk before plowing	14	1.5	.42	.09
Plow	50	1.0	1.75	.88
Fertilize	28	1.5	.58	.24
Disk	88	1.0	.52	.46
Harrow	88	2.0	.26	.46
Float or level	75	1.8	.43	.58
Bed	50	1.0	.75	.38
Plant	100	1.0	.82	.82
Cultipack	12	1.0	.33	.04
Block and thin	100	1.0	13.71	13.71
Cultivate	100	4.1	.89	3.65
Corrugate	25	3.0	.58	.44
Irrigate	100	4.3	2.05	8.82
Hoe	74	1.8	10.00	13.32
Total preharvest				44.85
Cut, load and haul	100	1.6	29.88	47.81
Total harvest				47.81
Total man-hours				92.66
Total tractor-hours				8.04
Total truck-hours				4.93

Number of records - 8
Yield per acre (crates) - 125

Table 14.- Peas for Fresh Market: Man-and power-hours per acre in the Southwestern Irrigated area of Idaho, 1950

Operation	Acres covered	Times over	Man-hours per acre once over	Average hours per acre
	Pct.	No.	Hrs.	Hrs.
Plow	97	1.0	1.86	1.80
Disk	68	1.4	.60	.57
Spring-tooth harrow	14	1.0	.46	.06
Spike-tooth harrow	100	2.1	.26	.55
Float or level	73	1.4	.52	.53
Fertilize	25	1.0	.41	.10
Drill	100	1.0	.68	.68
Finger weeder	24	2.2	.68	.36
Rotary hoe	17	2.0	.53	.18
Cultivate	88	3.5	.74	2.28
Irrigate	100	3.6	1.90	6.84
Dust 1/	18	1.0	.41	.07
Total preharvest				14.02
Pick, weigh and haul	100	1.1	198.48	218.33
Total harvest				218.33
Total man-hours				232.35
Total tractor hours				7.14
Total truck-hours				4.90

Number of records - 8
Yield per acre (pounds) - 5,133

1/ Excludes dusting with airplane.

Table 15.- Dry Onions: Man-and power-hours per acre in indicated areas of Idaho, 1950

Operation	Southwestern Irrigated				South Central Irrigated			
	Number of records 9; Yield per acre (cwt.) 375				Number of records 11; Yield per acre (cwt.) 370			
	Acres covered	Times over	Man-hours per acre once over	Average hours per acre	Acres covered	Times over	Man-hours per acre once over	Average hours per acre
	Percent	Number	Hours	Hours	Percent	Number	Hours	Hours
Spread manure	11	1.0	24.10	2.65	1	1.0	8.00	0.08
Disk before plowing	12	1.5	.42	.08	-	-	-	-
Plow	100	1.0	1.73	1.73	91	1.0	2.26	2.06
Fertilize	46	1.0	.44	.20	31	1.0	.51	.16
Disk	89	1.4	.54	.67	82	1.1	.52	.47
Harrow	78	1.9	.24	.36	100	3.6	.46	1.66
Bed	56	1.0	.74	.41	4	1.0	.67	.03
Float or level	78	1.9	.43	.64	84	1.2	.47	.47
Plant	100	1.0	.85	.85	100	1.0	1.04	1.04
Harrow	-	-	-	-	7	1.0	.29	.02
Cultipack	42	1.0	.44	.18	6	1.0	.54	.03
Cultivate	100	7.1	1.08	7.67	100	6.2	1.36	8.43
Side-dress	11	2.0	.58	.13	18	1.0	.41	.07
Irrigate	100	9.2	2.44	22.45	100	7.5	2.74	20.55
Hoe	100	4.9	22.67	111.08	100	3.1	33.14	102.73
Dust or spray	44	4.2	.69	1.28	5	1.0	.20	.01
Total preharvest				150.38				137.81
Roll tops	11	1.0	1.67	.18	-	-	-	-
Pull, top and sack	61	1.0	67.50	41.18	36	1.0	66.60	23.98
Lift	39	1.0	1.50	.58	64	1.0	1.34	.86
Top and sack	39	1.0	60.00	23.40	64	1.0	59.20	37.89
Haul	100	1.0	18.75	18.75	100	1.0	18.50	18.50
Total harvest				84.09				81.23
Total man-hours				234.47				219.04
Total tractor-hours				16.29				15.33
Total truck-hours				15.75				10.54

Table 16.- Sweet Corn for Processing: Man-and power-hours per acre in indicated areas of Idaho, 1950

Operation	Southwestern Irrigated				South Central Irrigated			
	Number of records 11 Yield per acre (tons) 4.2				Number of records 12 Yield per acre (tons) 4.5			
	Acres covered	Times over	Man-hours per acre once over	Average hours per acre	Acres covered	Times over	Man-hours per acre once over	Average hours per acre
	Percent	Number	Hours	Hours	Percent	Number	Hours	Hours
Plow	100	1.0	1.97	1.97	100	1.0	1.64	1.64
Spread manure	-	-	-	-	6	1.0	4.29	.26
Disk	86	1.7	.67	.98	100	1.8	.70	1.26
Spring-tooth harrow	4	1.0	.50	.02	-	-	-	-
Spike-tooth harrow	100	3.2	.30	.96	100	4.0	.38	1.52
Float or level	36	1.6	.47	.27	50	1.3	.55	.36
Corrugate	68	1.0	.49	.33	83	1.1	.54	.49
Plant 1/	100	1.0	.73	.73	100	1.0	1.00	1.00
Harrow	55	1.8	.30	.30	25	1.3	.20	.06
Side dress	9	1.0	.75	.07	-	-	-	-
Cultivate	100	3.7	.79	2.92	100	3.3	.98	3.23
Irrigate 2/	100	5.5	1.09	6.00	100	4.1	1.37	5.62
Hoe	2	1.0	9.00	.18	33	1.0	6.67	2.20
Total preharvest				14.73				17.64
Hand pick and haul	90	1.0	20.58	18.52	100	1.0	21.96	21.96
Machine pick and haul	10	1.0	4.88	.49	-	-	-	-
Total harvest				19.01				21.96
Total man-hours				33.74				39.60
Total tractor-hours				8.63				8.61
Total truck-hours				3.33				3.64
Total horse-hours				-				1.97

1/ Includes planting and fertilizing as one operation.
2/ Includes one irrigation before planting on a high proportion of the acreage.

Table 17.- Apples, Peaches, and Prunes: Man-and power-hours per acre in the Southwestern and South Central Irrigated Areas of Idaho, 1950

Operation	Apples: Number of records - 12; Yield per acre (bu.)-431				Peaches: Number of records - 21; Yield per acre (bu.)- 172				Prunes: Number of records - 15; Yield per acre (bu.) - 257			
	Acres covered	Times over	Man-hours per acre once over	Average hours per acre	Acres covered	Times over	Man-hours per acre once over	Average hours per acre	Acres covered	Times over	Man-hours per acre once over	Average hours per acre
	Pct.	No.	Hrs.	Hrs.	Pct.	No.	Hrs.	Hrs.	Pct.	No.	Hrs.	Hrs.
Prune	98	1.0	34.14	33.46	99	1.0	26.87	26.60	66	1.0	22.15	14.62
Remove brush	98	1.0	2.99	2.93	99	1.0	4.11	4.07	66	1.0	3.54	2.34
Corrugate	58	1.3	1.02	.77	67	1.8	.96	1.16	67	1.5	.82	.82
Irrigate	100	7.1	1.84	13.06	100	5.9	2.08	12.27	100	6.8	2.27	15.44
Mow	22	2.0	1.35	.59	25	1.8	1.22	.55	35	2.0	1.34	.94
Cultivate	42	1.6	.91	.61	70	3.2	1.06	2.37	80	2.4	1.05	2.02
Fertilize	50	1.0	1.08	.54	33	1.0	1.21	.40	33	1.0	1.05	.35
Spray	100	3.7	5.32	19.68	83	1.7	4.58	6.46	83	2.0	4.00	6.64
Smudge	5	2.0	3.00	.30	10	2.0	3.00	.60	5	2.0	3.00	.30
Thin	85	1.0	30.89	26.26	63	1.0	27.47	17.31	-	-	-	-
Prop	29	1.0	.81	.23	28	1.0	1.21	.34	-	-	-	-
Cover crop 1/	3	1.0	2.18	.07	3	1.0	1.34	.04	3	1.0	1.34	.04
Total preharvest				98.50				72.17				43.51
Pick	100	1.0	86.12	86.12	100	1.0	41.01	41.01	100	1.0	103.88	103.88
Haul 2/	100	1.0	34.45	34.45	100	1.0	12.04	12.04	100	1.0	15.07	15.07
Pack	70	1.0	56.77	39.74	50	1.0	33.41	16.70	90	1.0	59.53	53.58
Haul 3/	70	1.0	7.10	4.97	50	1.0	6.83	3.42	90	1.0	11.88	10.69
Supervise 4/	100	-	-	23.50	100	-	-	1.23	100	-	-	3.12
Total harvest				188.78				74.40				186.34
Total man-hours				287.28				146.57				229.85
Total tractor-hours				18.79				12.84				10.70
Total truck-hours				11.72				4.94				10.96
Total horse-hours				.67				.75				-

1/ Includes land preparation and seeding.
2/ Includes scattering boxes and hauling fruit to processing plant or packing shed.
3/ Includes loading and hauling packed fruit.
4/ Includes preharvest as well as harvest operations.

Table 18.- Sweet and Sour Cherries: Man- and power-hours per acre in the Southwestern and South Central irrigated areas of Idaho, 1950

Operation	Sweet Cherries: Number of records - 13; Yield per acre (pounds) - 3,924				Sour Cherries: Number of records 8; Yield per acre (pounds) - 2,216			
	Acres covered	Times over	Man-hours per acre once over	Average hours per acre	Acres covered	Times over	Man-hours per acre once over	Average hours per acre
	Percent	Number	Hours	Hours	Percent	Number	Hours	Hours
Prune	84	1.0	23.81	20.00	60	1.0	19.20	11.52
Remove brush	84	1.0	3.49	2.93	60	1.0	2.78	1.67
Corrugate	85	1.6	.84	1.14	62	1.2	1.05	.78
Irrigate	100	6.0	2.70	16.20	100	7.0	2.76	19.32
Mow	47	2.0	1.18	1.11	56	2.2	1.65	2.03
Cultivate	62	2.6	.96	1.55	44	2.2	.99	.96
Fertilize	16	1.0	1.08	.17	26	1.0	1.54	.40
Spray	33	1.2	5.16	2.04	62	1.6	2.16	2.14
Cover crop 1/	3	1.0	1.34	.04	3	1.0	1.33	.04
Total preharvest				45.18				38.86
Pick	100	1.0	201.24	201.24	100	1.0	88.64	88.64
Haul 2/	100	1.0	5.36	5.36	100	1.0	3.93	3.93
Pack	70	1.0	22.35	15.64	40	1.0	11.08	4.43
Haul 3/	70	1.0	2.83	1.98	40	1.0	2.22	.89
Supervise 4/	100	-	-	8.05	100	-	-	4.43
Total harvest				232.27				102.32
Total man-hours				277.45				141.18
Total tractor-hours				8.87				6.52
Total truck-hours				3.52				3.26
Total horse-hours				.13				--

1/ Includes land preparation and seeding.
2/ Includes scattering boxes and hauling fruit to processing plant or packing shed.
3/ Includes loading and hauling packed fruit.
4/ Includes supervision of preharvest operations.

Table 19.- Milk Cows: Man-hours per head and per 100 pounds of milk in indicated areas of Idaho, 1950

Area	Number of records	Average size of herd	Milk produced per cow	Man-hours	
				Per cow	Per cwt. milk
	Number	Cows	Pounds	Hours	Hours
Northern Cutover and Northern Wheat	45	9	5,133	145	2.82
North Central Range and South Central Range	13	5	5,401	186	3.44
Southwestern Irrigated	23	13	6,588	129	1.96
South Central Irrigated and Upper Snake	20	18	6,459	129	2.00
State	101	11	6,210	136	2.19

Table 20.- Milk Cows: Relation of size of herd and method of milking to man-hours per head and per 100 pounds of milk in Idaho, 1950

Number of cows per herd	Method of milking	Number of records	Average size of herd	Milk produced per cow	Man-hours	
					Per cow	Per cwt. milk
		Number	Cows	Pounds	Hours	Hours
1 to 4	Hand	32	3	5,591	185	3.31
5 to 14	Hand	11	8	5,298	174	3.28
5 to 14	Machine	32	10	6,506	124	1.91
15 and over	Machine	26	25	6,522	102	1.56

Table 21.- Cattle other than milk cows: Man-hours per head in indicated areas of Idaho, 1950

Area	Number of records 1/	Beef-cows man-hours per head	Other cattle-man-hours per head 2/	Cattle grain fattened - man-hours per head 3/
	Number	Hours	Hours	Hours
Northern Cutover and Northern Wheat	55	19	14	-
North Central Range and South Central Range	25	15	11	-
Southwestern Irrigated	29	13	18	1.4
South Central Irrigated and Upper Snake	19	13	16	1.6
State	128	17	15	-

1/ Number giving labor requirements for beef cows or other cattle.
2/ Includes young stock and bulls in dairy as well as beef herds.
3/ Per month.

Table 22.- Hogs: Man-hours per sow and litters in indicated areas of Idaho, 1950

Area	Number of records	Average number per farm	Man-hours per sow and litters	Pigs per litter	Average weight of hogs marketed
	Number	Sows	Hours	Number	Pounds
Northern Cutover, Northern Wheat, North Central Range and South Central Range	15	3	85	6	220
Southwestern Irrigated, South Central Irrigated and Upper Snake	14	3	79	6	212
State	29	3	80	6	214

Table 23.- Hogs: Relation between size of herd and man-hours per sow and litters in Idaho, 1950

Number of sows per herd	Number of records	Average number of sows per farm	Man-hours per sow and litters	Pigs per litter	Average weight of hogs marketed
	Number	Number	Hours	Number	Pounds
4 and under	20	2	101	6	215
5 and over	9	9	61	6	214

Table 24.- Chickens: Man-hours required for laying flocks in indicated areas of Idaho, 1950

Area	Number of records	Average size of flock	Rate of lay	Man-hours Per hen	Man-hours Per 100 eggs
	Number	Hens	Eggs	Hours	Hours
Northern Cutover and Northern Wheat	30	48	165	2.53	1.53
North Central Range and South Central Range	8	49	107	2.35	2.20
Southwestern Irrigated	14	51	142	2.28	1.61
South Central Irrigated and Upper Snake	14	53	142	2.25	1.58
State	66	50	145	2.33	1.61

Table 25.- Chickens: Relation of size of laying flock to man-hours per hen in Idaho, 1950

Number of hens per flock	Number of records	Rate of lay	Man-hours Per hen	Man-hours Per 100 eggs
	Number	Eggs	Hours	Hours
99 and under	45	134	2.81	2.10
100 and over	21	154	1.96	1.27

Table 26.- Chickens: Man-hours required for chickens raised in indicated areas of Idaho, 1950

Area	Number of records	Chickens raised per farm	Man-hours per chicken raised
	Number	Number	Hours
Northern Cutover and Northern Wheat	27	131	0.65
North Central Range and South Central Range	6	128	.68
Southwestern Irrigated	11	168	.62
South Central Irrigated and Upper Snake	15	364	.53
State	59	197	.59

Table 27.- Farm Maintenance: Man-hours per farm and proportion of all farm work in indicated areas of Idaho, 1950

Area	Number of records	All farm work - man-hours per farm	Farm-maintenance work: Man-hours per farm	Farm-maintenance work: Percent of all farm work
	Number	Hours	Hours	Percent
Northern Cutover and Northern Wheat	33	3,849	726	18.9
North Central Range and South Central Range	14	5,777	939	16.3
Southwestern Irrigated, South Central Irrigated and Upper Snake	26	5,706	895	15.7
State 1/	73	5,103	845	16.6

1/ Number of farms from the U. S. Census were used as weights in deriving the State average. Records of farm-maintenance work were not obtained in the Southeastern Dryland area.